

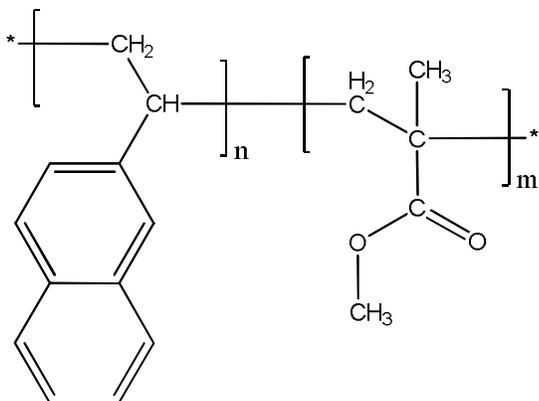
## Sample Name:

### Poly(2-vinyl naphthalene-b-methyl methacrylate)

\*Contains 10-15% homopoly (vinyl naphthalene)

## Sample # P3254B-VNMMA

### Structure:



### Composition:

Mn x 10 <sup>3</sup> VN-b-MMA	PDI
53.0-b-140.0	1.20

### Synthesis Procedure:

The details are given in the following paper:

Faquan Zeng, Mu Yang, Jianxin Zhang, Sunil K. Varshney. *Synthesis and characterization of block copolymers from 2-vinylnaphthalene by anionic polymerization*, Journal of Polymer Science Part A: Polymer Chemistry, 40, 24, 4387-4397 2002.

### Characterization:

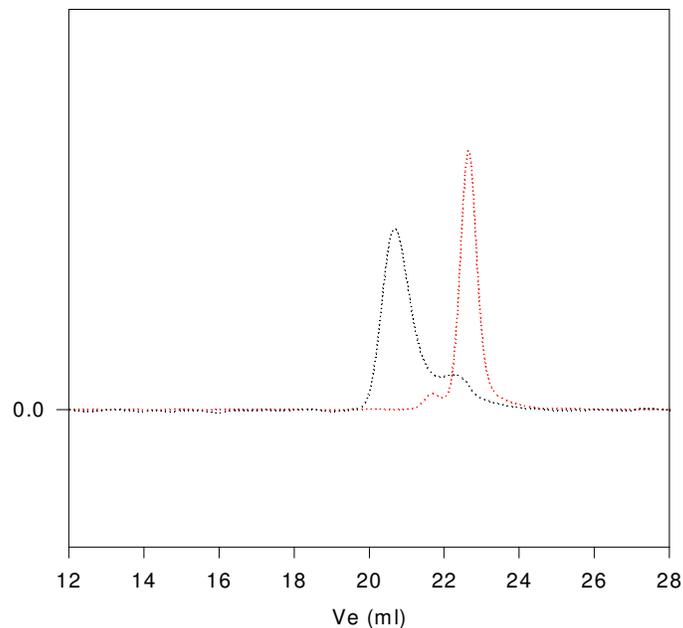
An aliquot of the anionic poly 2-vinyl naphthalene block was terminated before addition of MMA and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from <sup>1</sup>H-NMR spectroscopy.

### Solubility:

Poly(2-vinyl naphthalene-b-methyl methacrylate) block copolymer is soluble in toluene, cyclohexane, hexane, THF, CHCl<sub>3</sub>. The polymer can be precipitated from ethanol, methanol, water.

### SEC of the block copolymer:

#### P3254B-2VNMMA



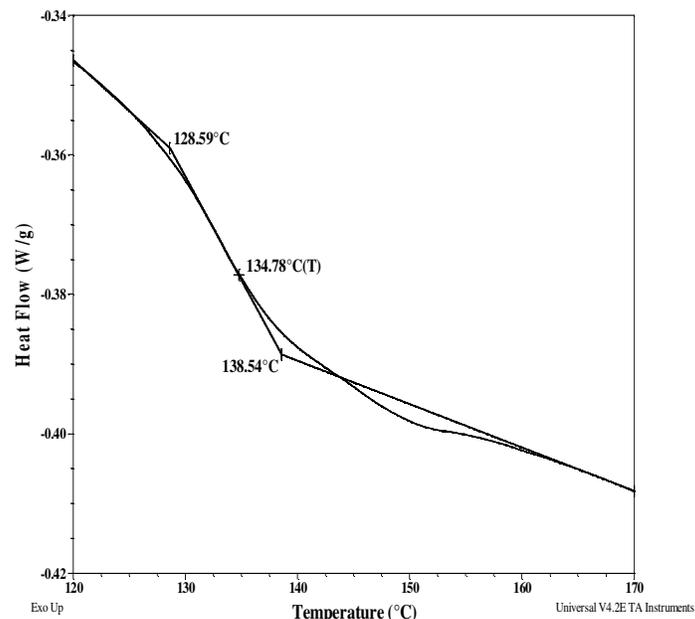
Size exclusion chromatography of poly(2Vinyl naphthalene-b-methylmethacrylate)  
Molecular weight determined on line light scattering detector  
Viscotek

..... Poly(2 vinyl naphthalene), M<sub>n</sub>=53000, M<sub>w</sub>=57500, PI=1.09

### Thermal analysis of sample P3254B-2VNMMA

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T<sub>g</sub>).

### Thermogram of PS block:



Exo Up

Universal V4.2E TA Instruments

## Glass transition temperature at a glance

$T_g$ for 2VN block	135°C
$T_g$ for MMA block	Not distinct

### $T_g$ of homopolymer 2VN as function of $M_n$

<b>2-vinyl naphthalene</b>		
<b>Sample #</b>	<b><math>M_n \times 10^3</math></b>	<b><math>T_g</math> (°C)</b>
P3376	18.4	136
P587	30	137
P571	54	143
P3302B	195	140

### $T_g$ of homopolymer MMA as function of $M_n$

<b>Methyl methacrylate</b>		
<b>Sample #</b>	<b><math>M_n \times 10^3</math></b>	<b><math>T_g</math> (°C)</b>
P2714	21.2	116
P2863	60	124
P4300	85	123
P4655	450	118